



**United States
Department of
Agriculture**

**Agricultural
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Service**

**Fruit and
Vegetable
Division**

**Processed
Products
Branch**

United States Standards for Grades of Frozen Sweetpotatoes

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This is the first issue of the United States Standards for Grades of Frozen Sweetpotatoes. This issue was published in the **FEDERAL REGISTER** of August 2, 1962 (27 FR 7624) to become effective September 4, 1962.

Voluntary U.S. grade standards are issued under the authority of the Agricultural Marketing Act of 1946, which provides for the development of official U.S. grades to designate different levels of quality. These grade standards are available for use by producers, suppliers, buyers, and consumers. As in the case of other standards for grades of processed fruits and vegetables, these standards are designed to facilitate orderly marketing by providing a convenient basis for buying and selling, for establishing quality control programs, and for determining loan values.

The standards also serve as a basis for the inspection and grading of commodities by the Federal inspection service, the only activity authorized to approve the designation of U.S. grades as referenced in the standards, as provided under the Agricultural Marketing Act of 1946. This service, available as on-line (in-plant) or lot inspection and grading of all processed fruit and vegetable products, is offered to interested parties, upon application, on a fee-for-service basis. The verification of some specific recommendations, requirements, or tolerances contained in the standards can be accomplished only by the use of on-line inspection procedures. In all instances, a grade can be assigned based on final product factors or characteristics.

In addition to the U.S. grade standards, grading manuals or instructions for inspection of several processed fruits and vegetables are available upon request for a nominal fee. These manuals or instructions contain detailed interpretations of the grade standards and provide step-by-step procedures for grading the product.

Grade standards are issued by the Department after careful consideration of all data and views submitted, and the Department welcomes suggestions which might aid in improving the standards in future revisions. Comments may be submitted to, and copies of standards and grading manuals obtained from:

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United States Standards for Grades of Frozen Sweetpotatoes

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Authority: Agricultural Marketing Act of 1946, Secs. 203, 205, 60 Stat. 1087, as amended, 1090, as amended (7 U.S.C. 1622, 1624).

Note: Compliance with the provisions of these standards shall not excuse failure to comply with the provisions of the Federal Food, Drug, and Cosmetic Act, or with applicable State laws and regulations.

§52.5001 Product description.

Frozen sweetpotatoes is the product prepared from the clean, sound root of sweetpotatoes (*Ipomoea batatas*) by washing, sorting, trimming, draining, and peeling, as the case may be. The product may or may not be cooked; may be prepared with the addition of suitable seasoning ingredient(s), sweetening ingredient(s), antioxidant(s), edible oil(s), spices, or other suitable additives permissible under the Federal Food, Drug, and Cosmetic Act. Such ingredients may or may not be admixed with the sweetpotatoes or they may be contained separately from the sweetpotato ingredient. When the sweetpotatoes have been cooked or partially cooked prior to freezing and are packed with a high density sirup and/or sugar to produce a **candied** effect, the frozen sweetpotatoes may be considered **Candied Sweetpotatoes** for the purposes of this subpart. In lieu of peeling, the product may be prepared as unpeeled sweetpotatoes in baked or stuffed form, with or without the addition of edible fat or oil to the peel. **Stuffed** form consists of cooked potatoes where the flesh has been removed from the peel, has been comminuted or crushed, and has been replaced in the peel or a preformed shell. The product is frozen in accordance with good commercial practice and maintained at temperatures necessary for the preservation of the product.

§52.5002 Colors of frozen sweetpotatoes.

- (a) **Golden.**
- (b) **Yellow.**
- (c) **Mixed (golden and yellow).**

§52.5003 Styles of frozen sweetpotatoes.

- (a) **Whole.**
 - (1) **Peeled.**
 - (2) **Baked (unpeeled).**
 - (3) **Stuffed (in peel or preformed shell).**
- (b) **Halved (or halves).**
 - (1) **Peeled.**
 - (2) **Stuffed (in peel or preformed shell).**

- (c) **Sliced.** This style consists of peeled units, cut longitudinally and/or crosswise, with flat-parallel or corrugated-parallel surfaces.
- (d) **French-cut.** This style consists of peeled units cut into strips, commonly called French-style cut, which may have flat or corrugated surfaces.
- (e) **Diced.** This style consists of peeled units cut into recognizable cube-shape units.
- (f) **Cut or chunks.** This style consists of peeled units of irregular sizes and shapes which do not conform to any of the foregoing single styles.
- (g) **Mashed or Souffle.** This style consists of peeled, cooked, and wholly comminuted or crushed sweetpotatoes, which may be molded or formed into pre-determined size and shape.
- (h) **Mixed or combinations.** This style consists of peeled units which are a combination of two or more of the foregoing styles.

§52.5004 Grades of frozen sweetpotatoes.

- (a) **U.S. Grade A or U.S. Fancy** is the quality of frozen sweetpotatoes that possess similar varietal characteristics; have a normal flavor and odor; have a good or reasonably good color; practically uniform, or reasonably uniform in size for the applicable style; are practically free from defects; possess a good character; and score not less than 90 points when scored in accordance with the scoring system outlined in this subpart.
- (b) **U.S. Grade B or U.S. Extra Standard** is the quality of frozen sweetpotatoes that may possess similar or mixed varietal color characteristics; have a normal flavor and odor; have a reasonably good color; are reasonably uniform in size for the applicable style; are reasonably free from defects; possess a reasonably good character; and score not less than 80 points when scored in accordance with the scoring system outlined in this subpart.
- (c) **Substandard** is the quality of frozen sweetpotatoes that fail to meet the requirements of U.S. Grade B.

§52.5005 Ascertaining the grade of a sample unit.

- (a) **General.** In addition to considering other requirements outlined in the standards, the following quality factors are evaluated in ascertaining the grade of the product:

(1) **Factors not rated by score points.**

(i) **Varietal characteristics, as applicable.**

(ii) **Flavor and odor.** A representative sample of the product is cooked to determine flavor and odor. **Normal flavor and odor** means that the flavor of the product before and after cooking is characteristic of properly prepared sweetpotatoes and is free from objectionable flavors and objectionable odors of any kind.

(2) **Factors rated by score points.**

(i) The relative importance of each factor which is scored is expressed numerically on the scale of 100. The maximum number of points that may be given such factors are:

Factors:	Points
Color	20
Uniformity of size	20
Absence of defects	40
Character	<u>20</u>
Total Score	100

(ii) Quality factors of color, uniformity of size, and absence of defects are determined by observing the product in the frozen or partially frozen state as soon as the units are separable into individual units, as the case may be, and after the product has been prepared by heating in a suitable manner; the factors of color and character (including consistency, as applicable) and flavor are evaluated after the product has been prepared by heating in a suitable manner as prescribed in this subpart.

§52.5006 Color

(a) **General.** The color of the product (before and after heating) is evaluated on the internal color in whole baked, whole stuffed, and halved stuffed styles and on the overall external color appearance for all other styles. Color variations due to packing media consisting of brown sugar or sweetening mixtures including brown sugar and spices are considered characteristic.

- (b) **"A" classification.** Frozen sweetpotatoes that possess a good color may be given a score of 18 to 20 points. **Good color** means a reasonably bright characteristic color (either yellow or golden, but not mixed) and that there may be reasonable variations of such characteristic color among the units, in each unit, or in the mass.
- (c) **"B" classification.** If frozen sweetpotatoes possess a reasonable good color, a score of 16 or 17 points may be given. **Reasonably good color** means that the color (yellow, golden, or mixed) may be variable among the units, in each unit, or in the mass and that the color may be no more than slightly dull. Mixed color types shall not be graded above U.S. Grade B, regardless of the total score for the product (this is a partial limiting rule).
- (d) **"SStd" classification.** If frozen sweetpotatoes possess an off-color, a score of 0 to 15 points may be given. **Off-color** means that the over-all color is extremely dull, such as, but not limited to the presence of units that are extremely oxidized or the presence of units that are green colored. Frozen sweetpotatoes that score in this classification shall not be graded above Substandard, regardless of the total score for the product (this is a limiting rule).

§52.5007 Uniformity of size.

- (a) **General.** The factor of uniformity of size for the styles of mashed and mixed frozen sweetpotatoes is not scored; the other three factors (color, absence of defects, and character) are scored and the total multiplied by 100 and divided by 80, dropping any fractions to determine the total score.
- (b) **Definition of a small unit.** A unit that weighs less than 1/10 ounce is considered a **small unit** when contained in sliced, French-cut, or cut styles.
- (c) **"A" classification.** Frozen sweetpotatoes that are practically uniform in size may be given a score of 18 to 20 points. **Practically uniform in size** in styles other than mashed or mixed means that:
 - (1) The frozen sweetpotatoes comply with the size and uniformity requirements for "A" classification in Table I of this subpart; and, in addition
 - (2) The over-all appearance of the product for the applicable style is not materially affected by units of abnormal size and shape.

- (d) **"B" classification.** If the frozen sweetpotatoes are reasonably uniform in size, a score of 16 or 17 points may be given. **Reasonably uniform in size** in styles other than mashed or mixed means that:
- (1) The frozen sweetpotatoes comply with the size and uniformity requirements for "B" classification in Table I of this subpart; and, in addition
 - (2) The over-all appearance of the product for the applicable style is not seriously affected by units of abnormal size and shape.
- (e) **"SStd" classification.** Frozen sweetpotatoes that fail to meet the requirements of paragraph (d) of this section may be given a score of 0 to 15 points and shall not be graded above Substandard, regardless of the total score for the product (this is a limiting rule).

Table I-Uniformity of Size Requirements for Certain Styles of Frozen Sweetpotatoes

Styles, as applicable	"A" classification		"B" classification	
	Uniformity of size		Uniformity of size	
Whole: (1) Peeled (2) Baked (unpeeled) (3) Stuffed	May vary moderately in size The weight of the smallest unit is no less than 2/3 the weight of the largest unit.		May vary considerably in size. The weight of the smallest unit is no less than 1/2 the weight of the largest unit.	
Halves; (1) Peeled (2) Stuffed	May vary moderately in size The weight of the smallest unit is no less than 2/3 the weight of the largest unit.		May vary considerably in size. The weight of the smallest unit is no less than 1/2 the weight of the largest unit.	
		Small Units		Small units
Sliced French-cut Cuts (or chunks)	May vary moderately in size except that the thickness of slices are reasonably uniform.	Composite weight does not exceed 5% by weight of all units	May vary considerably in size except that the thickness of slices are fairly uniform.	Composite weight does not exceed 10% by weight of all units
Diced	May vary moderately in size.	No limits	May vary considerably in size	No limits

§52.5008 Defects.

- (a) **General.** The factor of defects refers to the degree of freedom from particles of peel in peeled styles; broken skins and broken or distorted preformed shells in whole baked, whole stuffed, and halves stuffed styles; primary and secondary rootlets, fibrous ends, discolored areas, and corky areas, or from other defects that detract from the appearance or edibility of the unit or product.
- (b) **"A" classification.** Frozen sweetpotatoes of any style that are practically free from defects may be given a score of 36 to 40 points. **Practically free from defects** has the following meaning for the applicable styles:
- (1) **Whole baked; whole stuffed; halves stuffed.** The peel or shell is not broken nor the shell distorted to any noticeable extent other than in the opening in whole stuffed style; and the units are practically free from primary and secondary rootlets, internal fibers, internal corky areas, and any other defects which do not affect materially the appearance or the edibility of the product.
 - (2) **Whole peeled; halves peeled; mashed.** The product may contain not more than a slight amount of particles of peel, primary and secondary rootlets, untrimmed fibrous ends, discolored areas, corky areas, and any other defects which do not affect materially the appearance or the edibility of the product.
 - (3) **All other styles.** The aggregate weight of all defective units does not exceed 5 percent, by weight, of all the units. One unit in a container is permitted to be defective if such unit exceeds the allowance of 5 percent, by weight: **Provided,** That in all containers comprising the sample such defective units do not exceed 5 percent, by weight, of all the units, and the overall appearance and edibility of the product is not materially affected by the presence of defective units.
- (c) **"B" classification.** If the frozen sweetpotatoes of any style are reasonably free from defects, a score of 32 to 35 points may be given. Frozen sweetpotatoes that fall into this classification shall not be graded above U.S. Grade B, regardless of the total score for the product (this is a limiting rule). **Reasonably free from defects** has the following meaning for the applicable styles:

- (1) **Whole baked; whole stuffed; halves stuffed.** The peel or shell may be broken or the shell distorted to some extent other than in the opening in whole stuffed style; and the units are reasonably free from primary and secondary rootlets, internal fibers, internal corky areas, and any other defects which do not affect seriously the appearance or edibility of the product.
 - (2) **Whole peeled; halves peeled; mashed.** The product may contain not more than a moderate amount of particles of peel, primary or secondary rootlets, untrimmed fibrous ends, discolored areas, corky areas, and any other defects which do not affect seriously the appearance or edibility of the product.
 - (3) **All other styles.** The aggregate weight of all defective units does not exceed 10 percent, by weight, of all the units. One unit in a container is permitted to be defective if such unit exceeds the allowance of 10 percent, by weight: **Provided,** That in all containers comprising the sample such defective units do not exceed 10 percent, by weight, of all the units, and the overall appearance and edibility of the product is not seriously affected by the presence of defective units.
- (d) **"SStd" classification.** Frozen sweetpotatoes that fail to meet the requirements of paragraph (c) of this section may be given a score of 0 to 31 points and shall not be graded above Substandard, regardless of the total score for the product (this is a limiting rule).

§52.5009 Character.

- (a) **General.** The factor of character refers to the texture or consistency and condition of the flesh, the degree of freedom from pithy units and tough or coarse fibers, the uniformity of tenderness of the frozen sweetpotatoes after heating in a suitable manner, and the tendency of the frozen sweetpotatoes (except for mashed style) to retain their apparent original conformation and size without disintegration.
- (b) **"A" classification.** Frozen sweetpotatoes that possess a good character may be given a score of 18 to 20 points. **Good character and consistency** has the following meaning for the applicable styles:
 - (1) **Whole baked.** The flesh is not soggy nor dry and is practically free from tough or coarse internal fibers.

- (2) **Whole stuffed; halves stuffed; mashed.** The mass or stuffing possesses a uniformly smooth texture and consistency and is free from lumps and tough or coarse fibers.
 - (3) **All other styles.** The units possess a uniformly smooth texture, are practically free from tough or coarse fibers, and may be firm to soft but hold their apparent original conformation and size without material disintegration.
- (c) **"B" classification.** If the frozen sweetpotatoes possess a reasonably good character, a score of 16 or 17 points may be given. **Reasonably good character and consistency** has the following meaning for the applicable styles:
- (1) **Whole baked.** The flesh is not excessively dry and is reasonably free from tough or coarse internal fibers.
 - (2) **Whole stuffed; halves stuffed; mashed.** The texture and consistency of the mass or stuffing may be coarse and stiff but practically free from lumps, and not more than a few tough or coarse fibers may be present.
 - (3) **All other styles.** The units possess a reasonably uniform smooth texture, are reasonably free from tough or coarse fibers, and 75 percent, by weight, or more of the units hold their apparent original conformation and size without material disintegration.
- (d) **"SStd" classification.** Frozen sweetpotatoes that fail to meet the requirements of paragraph (c) of this section may be given a score of 0 to 15 points and shall not be graded above Substandard, regardless of the total score for the product (this is a limiting rule).

§52.5010 Preparation by heating.

Prepared by heating in a suitable manner means by either of the following applicable methods:

- (a) **Oven method.** (Applicable to any style.)
 - (1) Place the product and packing media, if any, in a shallow pan (or use the open carton if suitable for heating) of sufficient size so that the product may be spread to a uniform thickness of not more than 1-1/2 inches; and

(2) Place pan (or open carton) and frozen contents into properly ventilated oven, preheated to 375 degrees F., and allow to remain 30 minutes or longer until the interior portions of the larger units are thoroughly heated and cooked; or

(b) **Pot method.** (Not applicable to baked and stuffed styles). Place the product while still in the frozen state in a stainless steel cooking utensil and add enough water to cover the product. Bring to a boil, cover, and simmer until the larger units are thoroughly cooked.

§52.5011 Ascertaining the grade of a lot.

The grade of a lot of frozen sweetpotatoes covered by these standards is determined by the procedures set forth in the **Regulations Governing Inspection and Certification of Processed Fruits and Vegetables, Processed Products Thereof, and Certain Other Processed Food Products** (7 CFR 52.1 through 52.83).

§52.5012 Score sheet for frozen sweetpotatoes.

Size and kind of container			
Container marks or identification			
Label			
Package contents (ounces)			
Weight of media (ounces)-if contained separately			
Style of pack of sweetpotatoes			
Count (whole; halves)			
Type of media (if any)			
Brix measurement of media (if liquid and contained separately)			
Color (yellow; golden; mixed)			
Factors		Score Points	
Color	20	"A"	18-20
		"B"	16-17 <u>2/</u>
		"SStd"	0-15 <u>1/</u>
Uniformity of size	20	"A"	18-20
		"B"	16-17
		"SStd"	0-15 <u>1/</u>
Absence of defects	40	"A"	36-40
		"B"	32-35 <u>1/</u>
		"SStd"	0-31 <u>1/</u>
Character	<u>20</u>	"A"	18-20
		"B"	16-17 <u>1/</u>
		"SStd"	0-15 <u>1/</u>
Total Score	100		
Flavor and odor			
Grade			

1/ Indicates limiting rule.

2/ **Mixed Color** limited to Grade B or lower grade (partial limit limiting rule)

The United States Standards for Grades of Frozen Sweetpotatoes (which is the first issue) contained in this subpart shall become effective 30 days after publication hereof in the Federal Register.

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G.R. Grange,
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Marketing Services.

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